

REMARKS

Status of the Claims

Claims 1-14, 16, 20, and 22 are canceled, claim 15 has been amended, claims 17-19 and 21 have been previously presented, and claims 23-24 have been added. Support can be found throughout the specification and claims as originally filed. No new matter has been added.

The Rejection

In the last Office Action, the Office rejected Claims 15-19 and 21 under 35 U.S.C. § 103(a) as obvious over DE 3444813 to Andrejewsk et al. (hereinafter referred to as "Andrejewsk") in view of JP 6-313050. (Office Action at 1-2.) The Office correctly observes that Andrejewsk neither discloses nor teaches the combination of the claimed invention, but instead discloses sliders of reinforced polyamide rather than polyester. (*Id.* at 1.) The Office contends, however, that "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed an aromatic polyester such as PET or PBT as the resin material in the slide fastener of Andrejewsk." (*Id.* at 1-2.) The Office cites JP 6-313050 as the evidence purportedly supporting the modification to Andrejewsk necessary to arrive at the claimed inventions, stating that JP 6-313050 "teaches that PET or PBT and resins such as nylon 6 or nylon 66, (i.e. polyamide resin), are equivalent materials for use as the resin component of slide materials which comprise a thermoplastic resin, a fiber and a friction reducing agent." (Office Action at 2 (emphasis added).)

The Rejection Based on Andrejewsk and JP 6-313050 Should Be Withdrawn

Applicants respectfully submit that the rejection under Andrejewsk and JP 6-313050 is erroneous and should be withdrawn. The presently claimed invention is a

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slide fastener that includes a fiber-reinforced resin material of polyester selected from polybutylene terephthalate ("PBT"), polyethylene terephthalate ("PET"), and polycarbonate. As discussed in the specification, the wear resistance and strength of a slider of a slide fastener are important. In addition, when a slider is reciprocated at normal room temperature, the temperature of parts of the slider can increase to over 30°C due to the frictional heat caused by the sliding motion. (See Specification at 11.) It is important, therefore, that the effect of the material added as the sliding property-imparting agent should manifest at a temperature exceeding about 30°C. (*Id.*) The wear resistance of a thermoplastic resin reinforced with fibers is markedly improved in an approximate temperature range of 30°C to 80°C by incorporating therein a sliding property-imparting agent having a lower storage elastic modulus than the fiber-reinforced resin. (*Id.* at 10.) It is also important that the storage elastic modulus of the sliding property-imparting agent be not more than about 5×10^8 Pa at temperatures exceeding 30°C. (*Id.* at 11.)

The present invention is a particular article, a slider having:

- (a) a fiber reinforced resin material of polyester containing fibers, said polyester being selected from the group consisting of polybutylene terephthalate, polyethylene terephthalate, and polycarbonate, and
- (b) a material having a storage elastic modulus in the range of 3.5×10^8 Pa to 5.0×10^8 Pa in a service temperature range of 30°C to 70°C of a slider. This material is a sliding property-imparting agent added in a proper amount to a fiber-reinforced thermoplastic resin.

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The slider made of this material exhibits improved wear resistance as evinced by the fact that it has a particular elastic modulus when the temperature thereof has been elevated by friction.

The references cited by the Office do not explain the nature of the problem, much less the Applicants' solution to it as claimed in this application. By identifying the temperature increase caused by the friction present during the operation of slide fasteners, Applicants have identified a problem with prior art slide fasteners that until now has apparently been overlooked by those of ordinary skill in the art. This is evidence of nonobviousness. *See In re Spinnoble*, 160 U.S.P.Q. (BNA) 237, 243 (C.C.P.A. 1969). The lack of appreciation in the prior art of this problem is objectively shown in Andrejewsk itself, which discloses a preferred embodiment omitting lubricants. Thus, this disclosure in Andrejewsk actually teaches away from the Applicants' inventions, further supporting their nonobviousness. *See, e.g., In re Gurley*, 31 U.S.P.Q.2d (BNA) 1130, 1131 (Fed. Cir. 1994) ("[I]n general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant."). Furthermore, JP 6-313050 does not provide the motivation to modify the disclosure of Andrejewsk to arrive at the claimed inventions. JP 6-313050 is directed to a molding material comprising aramid long fibers, a thermoplastic resin, and a friction regulating agent, wherein the aramid long fibers are opened into monofilament state and impregnated with the thermoplastic resin and the friction regulating agent dispersed therein. (See Translation of JP 6-313050 ¶ 0004.) JP 6-313050 is intended to improve the poor mutual

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dispersibility of the aramid long fibers and the friction-regulating agent such as a fluorinated resin powder. (*Id.* ¶¶ 0002-0003.)

JP 6-313050 does recite nylon 66, nylon 6, PBT, PPD, POM, PP, and PES for use as a thermoplastic resin. (*Id.* ¶ 0005.) However, the example and comparative examples disclosed in JP 6-313050 use nylon 66 only. (*Id.* ¶ 0007-0009.) Also, this reference teaches that the material may be used for sliding moldings such as levers, rollers and gears (*id.* ¶ 0001), but makes no mention of a slider or a slide fastener. The Office has pointed to no evidence in JP 6-313050 that its general teachings associated with sliding molding materials are applicable to the slider or slide fasteners claimed by Applicants. Thus, when JP 6-313050 is considered as a whole and without the hindsight provided by Applicants' disclosure, the motivation for replacing the polyamide component of Andrejewsk with a polyester does not exist.


In view of the foregoing remarks, Applicants submit that the pending claims are patentable over the prior art references cited against this application. Applicants therefore request the Office's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: September 30, 2003

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